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Patent Appl. 10/605,512

Igor,

Please find attached details of my response to your office action of 5/24/2005. I have included a letter detailing each of the changes made in response to your comments and a copy of the patent specification with markup shown so that you can verify the changes I have made. I am also enclosing a "replacement specification" as we discussed with incorporates all of the aforementioned changes. The content of these changes does not include any additions to the claims in the original patent but rather serves to format, grammatically correct and clarify the content of the original application. Changes to the Figures are also detailed on a separate sheet in the attached details and replacement and new Figures are enclosed. Please let me know if any further or alternative documentation of this response is appropriate.

I have enclosed a CD with each of the enclosed documents provided electronically should this help you in processing my response.

Thank you for your assistance on the phone today, I enjoyed our conversation and look forward to speaking with you further.

Regards

F. J. Duncan Jr.

F. JEFF AND SUSAN H. DUNCAN



August 22, 2005

Igor Kershteyn  
Patent Examiner  
US Patent and Trademark Office  
Art Unit 3745

Patent Appl. 10/605,512

Igor

Thank you for your correspondence of 5/24/2005. I have attempted to address the particulars that you described herein as response to your office action. The following modifications have been made to my patent application and a "Replacement Specification" is provided. These modifications do not add any new matter to the application, but rather serve to clarify the intent of my original application with your guidance.

In response to your section entitled "Specification":

- The "Appendix Data" Section on lines 2-11 of page 1 and lines 1-0 of page 2 has been moved to the end of the specification as new paragraphs.
- On page two, delete lines 10-16.
- On page 4 lines 14 & 18, page 5 lines 7, 11 & 16 and page 6 lines 2, 6, 13 & 20 Change "512" to "the invention".
- On page 7 line 11, page 8 lines 1, 6, & 18 and page 9 lines 4 & 9, replace "PTO" with "Patent".
- On page 11 lines 7, 10, 13, 15 & 17 and page 12 lines 1, 3, 5, 8, & 10 replace the word "Drawing" with "Figure".
- On page 13, paragraph 29, line 16, deleted the phrase "(not withstanding claim 8)".

In response to your section on "Claim Objections":

- In claim 1, line 11 replace the word "introduce" with "introduced".
- In claim 2, line 2 replace the words "where in" with "wherein".
- In claim 7, line 4 replace the words "the supplying reservoir" with "a supply of water".
- In claim 9, line 4 delete the phrase "(exterior radius)".
- In claim 9, line 4 replace the words "helix" with "helical baffle".
- In claim 13, line 4 replace the words "the supplying reservoir" with "a supply of water".

In response to your section on "Claim Objections – 35 USC § 112":

- In claim 1, line 3 insert the words "said helical baffle is" before "sealed".
- In claim 1, line 4 insert the words "said generally cylindrical housing is" before "positioned".
- In claim 1, line 11 replace the words "mechanical" with "kinetic".
- In claim 1, line 12 replace "and transfer it to some form of" with "for" (in explanation of this and the previous change; the mechanical energy previously referenced is kinetic and is a subset of the kinetic energy referenced in line 17, the remainder being that of the fluid in motion after passing thru the device. The use of the term "transfer" may have been misleading in that the possible productive use of rotational kinetic is obvious without specifying that it be further transferred).
- In claim 1 line 17 delete the characters ", mechanical" (in explanation, it is redundant with kinetic as discussed above).
- In claim 9, line 3 insert the words "said helical baffle is" before "sealed".
- In claim 9, line 6 insert the words "said generally cylindrical housing is" before "positioned".
- In claim 9, line 12 replace the word "mechanical" with "kinetic".
- In claim 9, line 13, replace "and transfer it to some form of" with "for".
- In claim 9 line 18 delete the characters ", mechanical".

In response to your section on "Claim Objections – 35 USC § 102", the following discussion is provided for your consideration and guidance:

- Regarding the Morrison patent # 928,782:
  - This patent recites a device to be "placed in a water course, flume or natural stream of water" Energy is extracted by the ability to "present a large impact area for causing rotation of the cylinder".
  - The device envisioned in my invention differs significantly from the intent of Morrison's in that by slanting the devise and properly designing the helix, multiple "compartments" are formed which effectively lower the fluid extracting potential energy. Morrison's device is akin to putting a fan blade in a stream of water, mine is more akin to the buckets on a water wheel.
  - I assume that a modification to Claim 1 more clearly describing the internal baffle as "creating compartments for the containment of a liquid volume that would move along the axis of the cylinder as it is rotated" would be considered a material modification that would not be allowable.
  - I request the examiners advice in whether such a modification would be acceptable or whether a subsequent application might be viable, or other advice as available.
  - I question the examiner's rejection of claim 6 relative to the Morrison patent as the claims and specification make no mention as to such a leakage at the center radius of

the device and his figure 3, reference label 3, shows the cross section solid and not allowing leakage at the center.

- Regarding the Toyama patent # 4,272,685:
  - This patent is fundamentally similar to the Morrison patent in relation to the need for the impinging of flowing water for operation, consequently similar advice is requested of the examiner to assist in properly documenting the distinctive nature of the invention.
  - While the actual mechanism and intent of operation of the devices are significantly different, the specifics in the claim language that I believe differentiate my device are as follows:
    - The referenced patent's independent claim calls for "passing water in a pipe through a series of turbines". This is not envisioned nor possible, as in the invention the entrance and exit of the device are not, and cannot be sealed.
    - The turbines referenced above are "comprising a housing having a conically tapering configuration truncated at the smaller extent and blades disposed on an inner surface" The invention calls for a single helical baffle specifically, not for a plurality of blades. In Figures 4 & 6 the blades are clearly fan like impinging blades and plural in comparison to a continuous helical baffle as in the invention. A single blade in the Toyama device even if it were practical would not be covered.

In response to your section on "Drawings" the following changes were made to the specification:

- In paragraph 25, line 2 after "siphon feed technique." Insert the sentence "This depicts a varying radius of the housing along the axis."
- Insert a new paragraph after paragraph 28 as follows: "Figure 14. This Figure depicts the optional power take off by axial shaft at the center of the housing and the preferred embodiment of electrical generation."
- In paragraph 21, append to the end the sentence "Optional areas open at the center of the helical baffle (A) allow for a leakage of excess fluid over the baffle into the next lower chamber."
- In paragraph 28, append to the end the sentence "Optional areas open at the exterior of the helical baffle (A) allow for a leakage of fluid from the chambers to accomplish drainage into the next lower chamber."
- In Paragraph 19, replace the word "portrays", with "portrays along with Figure 2".
- The following text is appended to the end of paragraph 19 for clarity after removing text from Figure 1. "By decreasing the pitch, as shown in Figure 2, more turns per unit length, the amount of fluid contained in the device is increased. The additional volume is shown with the differentiated hatch pattern in Figure 2."
- The following text is appended to the end of paragraph 20 for clarity after removing text from Figure 2. "The figure shows an area (B) representing the cross section of fluid for a given pitch which will be spilled at the exit of the device. If the pitch was doubled additional fluid (A) would

be added. As the center of gravity of the additional fluid (A) is higher, the average potential energy lost at the exit spill with a larger pitch is greater.”

- The following text is appended to the end of paragraph 21 for clarity after removing text from Figure 3. “By varying the cross sectional design of the baffle, the amount of fluid contained in the housing can approach  $\frac{1}{2}$  the volume of the housing.”
- The following text is appended to the end of paragraph 22 for clarity after removing text from Figure 4, “For a given housing angle from horizontal (A) and a simple helix cross-section, there exists an optimal angle between the baffle and housing (B) to maximize the ratio of fluid volume to frictional surface. Figure 6 provides these ratios for various housing and baffle angles.”
- The following text is appended to the end of paragraph 23 for clarity after removing text and combining drawings in Figure 5. “The use of an enlarged radius or bulb like entrance to the housing as shown in dotted lines on the figure would add additional fluid (B) to the fluid (A) which would be contained in a constant radius housing. This additional fluid (B) being at a higher elevation will raise the center of gravity of the fluid contained in the first baffle area thereby reducing the loss of potential energy as fluid enters the device.”
- In Paragraph 24, replace the word “portrays”, with “portray along with Figure 9”.
- The following text is appended to the end of paragraph 24 for clarity after removing text from Figure 6, “Figure 8 shows the relative level of the center of gravity of the fluid (B) contained in the lower baffle for a housing of constant radius, to the level of the exit stream (A). By flattening the exit housing at the exit as shown in Figure 9, the level of the center of gravity of the fluid (D) contained in the bottom baffle is lowered relative to the level of the exit stream (C).”
- The following text is appended to the end of paragraph 25 for clarity after removing text from Figure 7, “A siphoning mechanism at the entrance to the device would allow for flexibility in height of a supply reservoir, simplification of fluid entry and the ability for the device to be located in a position not directly adjacent to the supply reservoir.”
- The figure numbers in paragraphs 19 through 29, 45, 48, and 50 through 53 are adjusted to reflect the renumbering of figures on the next page, as follows:
  - Figure 2 becomes Figure 3
  - Figure 3 becomes Figure 4
  - Figure 4 becomes Figure 5
  - Figure 5 becomes Figure 7
  - Figure 6 becomes Figure 8
  - Figure 7 becomes Figure 10
  - Figure 8 becomes Figure 11
  - Figure 9 becomes Figure 12
  - Figure 10 becomes Figure 13

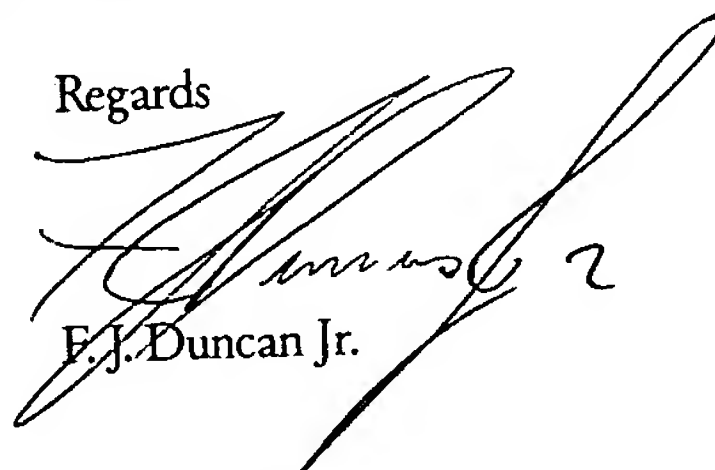
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In response to your section on "Drawings" the following changes were made to the figures:

- Figure 1 is revised by removing the lower figure and all text other than the parts labels.
- A new figure is added, designated Figure 2 containing the drawing previously at the bottom of Figure 1.
- In the original Figure 2, remove the drawing on the right and the text other than the labels and change the Figure number to Figure 3.
- In original Figure 3, remove all text except the 3 drawing labels, add the reference "A" to allow description of leakage at the center radius and change the figure number to Figure 4.
- In the original Figure 4, remove the graph and text and include it in a new Figure designated Figure 6, add labels for "Baffle" and "Housing".
- Change the original Figure 4 to be Figure 5.
- In original figure 5, the left drawing is removed and the right drawing is amended to show the optional larger radius or bulb shape at the entrance of the housing as previously shown in the removed drawing. Change the figure number to Figure 7.
- In Figure 6, remove the drawing at the bottom and the text other than the labels, Add labels for the housing, baffle and references A & B for clarification in the summary of drawings. Change the figure number to Figure 8.
- Create a new Figure 9 containing the drawing removed from original Figure 6 above. Add labels for the housing, baffle and references C & D for clarification in the summary of drawings.
- Figure 8 is amended to remove text and heading that are inappropriate and the figure number is changed to Figure 11.
- Figure 9 is amended to remove text and heading that are inappropriate and the figure number is changed to Figure 12.
- Figure 10 is amended to remove a curved lead line as suggested and the figure number is changed to Figure 13. The drawing is further modified to show the optional areas of leakage at the exterior radius which are labeled "A".
- A new Figure 14 is added to show the feature of energy off take accomplished by an axial shaft at the center radius of the device.

Again, thank you for the assistance given by your detailed response in the office action. Please accept the replacement specification enclosed which encompasses all of these changes.

Regards



E.J. Duncan Jr.